



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/627,147	07/21/2000	Michael F. Cohen	MS1-532US	9962

22801 7590 05/21/2003

LEE & HAYES PLLC  
421 W RIVERSIDE AVENUE SUITE 500  
SPOKANE, WA 99201

EXAMINER

AMINI, JAVID A

ART UNIT	PAPER NUMBER
----------	--------------

2672

DATE MAILED: 05/21/2003

7

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/627,147

Applicant(s)

COHEN ET AL.

Examiner

Javid A Amini

Art Unit

2672

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 34-46 is/are rejected.
- 7) ☒ Claim(s) 13-33 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

*Response to remarks on page 12*

This response regards to reconsideration filed on Feb. 27, 2002 of an office action dated October 28, 2002.

1. Applicant disclosed on last paragraph page 15, that Freeman does not appear to disclose computing a single weight value for each example, also applicant disclosed in specification a brief description of weight value on page 15 line 5, the set of weights for that point consists of a weight value for each example. The individual weight values are then blended together to define the shape or motion at the given point. Now Freeman discloses an equation (8) in (col. 9, lines 10-28) since the function  $f$  converts body motion coefficients to predicted sensor responses. (Points for each example)  $l_i$  is the  $i$ th point position specified by the user, and  $P_i$  projects the coefficients onto the corresponding  $i$ th stick figure part 2-d position.  $k_1$  and  $k_2$  are constants, which reflect the weights of the image data, the priors over human motions, and the interactively specified 2-d point matches. Therefore Freeman computes a single weight value and combining of these values become an image data.
2. Claims 13-33 are allowable, if applicant amends claims 13, 22 and 28 with more supportive definition of (radial basis function and cardinal basis function) in the claims. For example: applicant can insert the forms of cardinal basis and radial basis functions in to the claims from specification on page 17 middle paragraph and on page 23 first paragraph respectively.
3. Remark on page 22, middle paragraph regarding claim 34 is not persuasive. Because pseudo means artificial or fake, therefore see (col. 29, part of the program) that call to remove artificial (pseudo) edges.

Art Unit: 2672

4. Remark on page 23, second paragraph regarding claim 39 is not persuasive. Because instead of narrowing down the limitation of this claim, applicant added more broad limitation (strange blended form) in explanation third paragraph on page 23.

*Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

1. Claims 1-12, 34-46 rejected under 35 U.S.C. 102(a) as being anticipated by Freeman US patent 6,115,052.

2. Claim 1, Freeman et al. hereinafter, Freeman discloses, "providing a shape or motion that is to be a animated, the examples being provided relative to a multi-dimensional abstract", in (Col. 2, lines 40-48) a simplified rendering domain, that yields an optimal 3-d estimate of human motion (providing a shape and motion) used to create realistic animations given a 2-d temporal sequence (multi-dimensional). Freeman discloses, "selecting a point within the multi- dimensional abstract space that does not Coincide with a point that is associated with any of the examples, the selected a point corresponding to a shape or motion within the abstract space", in Figs. 5a, b, and c, that diagrammatic representations showing three random draws from the gaussian prior distribution over the 37 3-d marker positions (a point within the multi-dimensional), with the results all looking human, and corresponding roughly to human motions (selected a point corresponding to shape or motion). Freeman discloses, "computing a single and combining the single weight values for each of the", in (Col. 2, lines 7-24) equation 1, which reflect the weights of the image data (computing and combining the weight values), the priors over human motions, and the interactively specified 2-d point matches.

3. Claims 2 and 3 Freeman discloses, "selecting is performed by an application; and by a game application", in (Col. 1, lines 19-22) that Many computer applications would follow the same abilities to infer 3-d motions. There are applications to public safety for elevators and escalators, as well as in interactive games, and virtual reality.

4. Claims 4, 5, and 6 Freeman discloses, "Selecting and computing and combining are performed at run time", see Fig. 5, which Gaussian distribution provides a useful prior model for how a human moves over time (runtime). And also Freeman teaches in (Col. 10, line 42-46) that an initial estimate of the marker positions for various time frames can be calculated (computing) from the motion estimates from the previous motion segments (combining).

Application/Control Number: 09/627,147

Art Unit: 2672

5. Claim 7, Freeman discloses, "defining a cardinal basis for each example; evaluating the cardinal basis for each example relative to the selected point to provide the weight value", in (col. 2, lines 29-39) that in the subject invention the 3-d reconstruction in a simplified image rendering domain utilizes a Bayesian analysis to provide analytic solutions to fundamental evaluation about estimating figural motion from image data, which are the definition for cardinal basis.
6. Claim 8, Freeman discloses, "a radial basis function portion; and another portion that is different from the radial basis function portion", in (col. 1, lines 8-11) that the invention relates to a system for recognizing (radial basis) of body motion and more particularly to a system for reconstructing an estimate of the 3dimensional positions of a human body (combination of different portion) from a live or prerecorded sequence of images of the body.
7. Claim 9, As per claim 9, "another portion is not a radial basis function portion", the step is inherent because in order to implement an object motion, an object contains different radial basis portion.
8. Claim 10, Freeman demonstrated in Fig. 3a, "another portion is a linear portion", and (Col. 1, lines 63-67) that in order to accomplish the optimization, the optimizer finds the most probable linear combination of training data to explain the input video, accommodate user corrections, and be a likely 3-d motion segment.
9. Claim 11, Freeman demonstrated "instructions are executed by a computer", see Fig. 1, this is inherent because many applications would follow from a computer with the same abilities to infer 3-d motions.
10. Claim 12, Freeman discloses, "Computer is programmed with instructions which, executed by the system", in (Cols. 11366) the computer instructions for a system.
11. Claim 34, Freeman discloses, "defining a set of examples that pertain to a form or motion that is to be animated, the examples being provided relative to a multi dimensional abstract space", in (Col. 2, lines 7-24) equation 1, which reflect the weights of the image data, the priors over human motions, and the interactively specified 2-d point matches. Freeman discloses, "examining a plurality of forms or motions that are animated within the abstract space from the defined set of examples", in (col. 2, lines 29-39) that in the subject invention the 3-d reconstruction in a simplified image rendering domain utilizes a Bayesian analysis to provide analytic solutions to fundamental evaluation about estimating figural motion from image data. Freeman discloses, "identifying at least one form or motion that is undesirable", that the invention relates to a system for recognizing (radial basis) of body motion and more particularly to a system for reconstructing an estimate of the 3-dimensional positions of a human body (combination of different portion) from a live or pre-recorded sequence of images of the body. Freeman discloses, "selecting a form or motion from a location within the abstract space that is proximate a location that corresponds to the undesirable form or motion", in (Col. 9, lines 5-7) that the user can interactively specify the correct location of any stick figure part at any time

Art Unit: 2672

frame. This effectively places a spring between the image position and the stick figure part at that particular time. Freeman discloses, "replacing the undesirable form or motion with the selected form or motion to provide a pseudo-example that constitutes a linear sum of the examples of the set of examples", in (Col. 29, part of the program) that call to remove artificial (pseudo) edges.

12. Claim 35, Freeman discloses, "linearly approximating a degree of freedom that is associated with a new form or motion that is to be rendered based upon the set of examples", in (COLs. 11-366) the computer instructions cause the blending system to perform of linear approximation, accounting, and summing for each form to provide multiple fundamental basis. Freeman discloses, "defining a radial basis function for each of the examples; combining the linear approximation and the radial basis functions to provide a cardinal basis function", in (col. 2, lines 29-39) that in the subject invention the 3-d reconstruction in a simplified image rendering domain utilizes a Bayesian analysis to provide analytic solutions to fundamental evaluation about estimating figural motion from image data. Also in Fig. 8 shown the resulting estimates from evaluating a function to scaling individual weights for linear combination of basis functions. Freeman discloses, "using the cardinal basis function to render the new form or motion", in (col. 2, lines 29-39) that in the subject invention the 3-d reconstruction in a simplified image rendering domain utilizes a Bayesian analysis to provide analytic solutions to fundamental evaluation about estimating figural motion from image data.

13. Claims 36 and 38, Freeman discloses, "Acts of linearly approximating and defining are performed for each example", in (COLs. 11-366) the computer instructions cause the blending system to perform of linear approximation, accounting, and summing for each form to provide multiple fundamental basis. Freeman discloses, "combining each of the respective linear approximations and their associated radial basis functions to provide multiple cardinal basis functions, one for each example", in (COLs. 11-366) the computer instructions cause the blending system to perform of linear approximation, accounting, and summing for each form to provide multiple fundamental basis. Freeman discloses, "combining the multiple cardinal basis functions to define a function that describes the new form or shape within the abstract space", in (Cols. 11-366) the computer instructions cause the blending system to perform of linear approximation, accounting, and summing for each form to provide multiple fundamental basis. Also discloses in (Col. 29, part of the program) a call to remove artificial (pseudo) edges.

14. Claim 37, Freeman discloses, "the radial basis functions are selected from a b-spline family of radial basis functions", (Col. 2, lines 54-67) the body is transparent, and each marker is rendered to the image plane orthographically.

15. Claim 39, Freeman discloses, "defining at least two examples of a form, a first of the example forms being defined in a first position and a second of the example forms being defined in a second position that is different from the first position; computing a form in the first position such that when the computed form is subjected to a transform blending operation that places the computed form in the second position, it will match the second example form", This claim has very broad limitation, therefore, the step is inherent because in order to define two different

Art Unit: 2672

positions, one must have defined the first and second positions for computing the parameters which is involved.

16. Claim 40, Freeman teaches, "the first position is a rest position", this step is inherent because the first position must be a start (rest) position.

17. Claim 41, Freeman teaches, "the first position is a rest position and the second position is angularly displaced from the first position", this step is inherent because the first position must be a start (rest) position and second position angularly displaced since this work involves new form or motion.

18. Claim 42, Freeman teaches, "computing a plurality of vertices associated with the form", in (Col. 27, part of program) take a list of points (plurality of vertices) in camera coordinates and transfer them into world coordinates.

19. Claim 43, Freeman teaches, "after computing the plurality of vertices, geometrically blending the computed form in the first position with the first example form in the first position to provide a geometrically blended form in the first position", this step is inherent because in order to define two different positions, one must have defined the first and second positions for computing the parameters which is involved.

20. Claim 44, Freeman teaches, "geometrically blending, transform blending the geometrically blended form to provide the form that matches the second example form", in (Col. 27, part of program) take a list of points (plurality of vertices) in camera coordinates (first example) and transfer them into world coordinates (second example).

21. Claim 45, Freeman teaches, "the example forms pertain to a skeleton-based figure", this step is inherent because the first example is an object that combination of parameters base on its skeleton.

22. Claim 46, Freeman teaches, "define at least two examples of a form, a first of the example forms being defined in a first position and a second of the example forms being defined in a second position that is different from the first position", in (Col. 3, lines 49-66) that multiplying values by coefficients and adding the results yields the new form or motions. Freeman teaches, "compute a form in the first position such that when the computed form is subjected to a transform blending operation that places the computed form in the second position, it will match the second example form", in (Col. 3, lines 49-66) that multiplying values by coefficients and adding the results yields the new form or motions. Freeman teaches in (Col. 27, part of program) take a list of points (plurality of vertices) in camera coordinates (first example) and transfer them into world coordinates (second example). This step is inherent because in order to define two different positions, one must have defined the first and second positions for computing the parameters, which is involved.

Art Unit: 2672

*Conclusion*

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Javid A Amini whose telephone number is 703-605-4248. The examiner can normally be reached on 8-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Razavi can be reached on 703-305-4713. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-8705 for regular communications and 703-746-8705 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-0377.

Javid A Amini  
Examiner  
Art Unit 2672

Javid Amini  
May 5, 2003



**MICHAEL RAZAVI**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2600**